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HOANG, SON T				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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Office Action Summary

Application No.

10/559,386

Applicant(s)

SURAKKA ET AL.

Examiner

SON T. HOANG

Art Unit

2165

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 March 2009.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-31 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 06 December 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-8508)
4) ☐ Interview Summary (PTO-413)
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____
Paper No(s)/Mail Date _____

Response to Amendment

1. This communication is in response to the amendment filed on March 10, 2009.

Claims 1, 20-21, 24-26, 28, and 31 are amended.

Claims 1-31 are pending.

Response to Arguments

2. Objection to claim 25 is withdrawn in view of Applicant's amendment.
3. The 35 U.S.C. 112, second paragraph, rejections of **claims 1-31** are withdrawn.
4. The 35 U.S.C. 101 rejections of **claims 1-23, 26-28, and 31** are withdrawn in view of Applicant's amendment.
5. Applicant's arguments with respect to the rejections of the pending claims have been fully considered but are not persuasive.

First, Applicant argues towards the 35 U.S.C. 103(a) rejections of **claims 1, 21** regarding the fact that Simske does not teach or disclose automatically updating a synonym set in a computer readable database and associated with the value of the data field by adding the synonym candidate to the synonym set without intervention of a user before searching for a counterpart (Page 15 of Remarks).

The Examiner respectfully disagrees with the above remarks. Accordingly, Simske discloses automatically updating a synonym set in a database (*Once the weighting for each possible synonymic query is determined in block 605 of Figure 6 (e.g., by multiplying the assigned weight value for each word of the query), the highest weighted "Q" queries to be included in the constructed synonymic search query are determined in block 606. For instance, in the above example, the highest weighted 25*

synonymic queries (which includes the original user-input query itself) are determined for inclusion in the constructed synonymic search query, [0116]). That is, Simske discloses generation and/or maintenance of a list of synonymic terms including the original input terms using XML representation (the synonyms for "class" in order of their weighting are: "set" (with a weighting of 0.9), "group" (with a weighting of 0.85), "division" (with a weighting of 0.72), "grade" (with a weighting of 0.65), "rank" (with a weighting of 0.51), "category" (with a weighting of 0.42), and "order" (with a weighting of 0.23), [0103]-[0104]). Further, there are multiple alternative ways to autonomously generate a synonymic list by association of a synonymic search application and any electronic thesaurus ([0071]).

As the generation and/or maintenance of a synonym list (claimed synonym database) is presented above, Simske further discloses automatically adding the synonym candidate to the synonym set without intervention of a user before searching for a counterpart (*if a user-input query includes the phrase "ball sport", then any synonyms of "ball" denoting "dancing" rather than "sports equipment" may be discarded by the synonymic search application, [0112]).* It clearly shows that if a synonym is not semantically appropriate to the input keyword, it will not be added to the synonym list and likewise.

Second, Applicant argues towards the 35 U.S.C. 103(a) rejections of **claims 1, 21** regarding the fact that Simske does not teach or disclose determining synonym candidates taking into account writing variations (Page 16 of Remarks).

The Examiner respectfully disagrees with the above remarks. Accordingly, Simske discloses generation of synonymic list corresponding to input terms using meaning proximate synonyms. For example, the synonyms for "class" are: "set" (with a weighting of 0.9), "group" (with a weighting of 0.85), "division" (with a weighting of 0.72), "grade" (with a weighting of 0.65), "rank" (with a weighting of 0.51), "category" (with a weighting of 0.42), and "order" (with a weighting of 0.23), [0103]-[0104]). It is well shown that "class" and "set", for example, are two synonyms with different writing variation as claimed.

Claims 2-20, and 22-30 are also rejected for similar reasons presented above.

Thus, the Examiner contends that all limitations as recited in the claims have been addressed in this Action. Hence, Applicant's arguments do not distinguish over the claimed invention over the prior arts of record.

For the above reasons, the Examiner believes the rejection of this instant Office action is proper.

Claim Objections

6. **Claim 1** is objected to because of the following informalities: citation of an obscured phrase "*automatically updating a synonym set in a computer readable database and associated with the value of the data field...*" on lines 11-12. Appropriate correction is required.

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. **Claims 1-6, 9, and 13-31** are rejected under 35 U.S.C. 103(a) as being unpatentable over Simske et al. (Pub. No. US 2004/0064447, filed on September 27, 2002; hereinafter Simske) in view of Toner et al. (Pub. No. US 2004/0024760, filed on July 31, 2002; hereinafter Toner).

Regarding **claim 1**, Simske clearly shows and discloses a method of processing a data record for finding a counterpart in a reference data set (*Figure 6*), the method comprising the steps of:

determining, by a processor, a value of a data field, the data field representing an identifier (*Suppose the user inputs the query "class list for Stanford", [0101]*),

determining from a set of predetermined identifier values at least one synonym candidate for the value of the data field (*For the term "class", the following synonyms are identified by the synonymic search application: set, group, division, grade, rank, category, and order. Thus, 7 synonyms are identified for the term "class", resulting in 8 candidate terms (including the word "class" itself) that may be used in searching for "class". For the term "list", the following synonyms are identified by the synonymic search application: catalog, inventory, register, record, roll, and directory. Thus, 6*

synonyms are identified for the term "list", resulting in 7 candidate terms (including the word "list" itself) that may be used in searching for "list", [0101]),

determining if a synonym candidate and the value of the data field fulfill a predetermined synonym acceptance criterion (*supposing that no more than 25 queries are allowed (e.g., because of the user-tuned breadth of the synonymic search query to be performed and/or because of the synonymic search application's implemented query limits), the above-identified 56 queries need to be reduced to the 25 optimal queries to be utilized, [0101]),* and if the predetermined synonym acceptance criterion is fulfilled, associating the value of the data field and the synonym candidate as synonyms (*the synonym database (Suppose such statistics are available for "class" and "list", then the various synonyms for each of the terms may be weighted based on their relative proximity to their respective base word (i.e., "class" or "list"), [0103]) and automatically updating a synonym set in a computer readable database and associated with the value of the data field by adding the synonym candidate to the synonym set without intervention of a user before searching for a counterpart (Once the weighting for each possible synonymic query is determined in block 605 of Figure 6 (e.g., by multiplying the assigned weight value for each word of the query), the highest weighted "Q" queries to be included in the constructed synonymic search query are determined in block 606. For instance, in the above example, the highest weighted 25 synonymic queries (which includes the original user-input query itself) are determined for inclusion in the constructed synonymic search query, [0116]. If a user-input query includes the phrase*

"ball sport", then any synonyms of "ball" denoting "dancing" rather than "sports equipment" may be discarded by the synonymic search application, [0112]),

searching for the counterpart for the data record by comparing to entries of the reference data set the value of the data field and/or the synonym set after the step of determining if the predetermined synonym acceptance criterion is fulfilled (the overall relevance of all the search results is determined by comparing its keywords to those in the original, user-input query. The top result(s) of each individual query included in a synonymic search query may be presented to a user, which may widen the breadth of the search query--e.g., provides a trade-off between overall weight and weight within a novel query, [0145]), wherein if the synonym set was updated, said comparison to the synonym set comprises comparison to the updated synonym set in the computer readable database (a number "Q" of queries to be included in the synonymic search query is determined based at least in part on the breadth desired for the synonymic search query. If the user tunes the breadth of the synonymic search query to be very general, then the number "Q" may be determined to be much larger (e.g., 25 or more), or the user may tune the breadth to any other amount desired. Thus, the tuning of the breadth of the synonymic search query in block 303 may dictate the total number of queries to be included in the constructed synonymic search query, [0096]. It is well inherent that if the breath of the query is greater than 26, then the top 26 queries are produced for searching for counterparts).

Simske does not explicitly disclose the data field is from a record, and the synonyms take into account writing variations.

However, Toner discloses the data field is from a record (*Users select whether they wish to use a single Suspect name at a time, manually entered by the keyboard, or to use an existing file containing a list of Suspect names, [0094]*), and synonyms take into account writing variations (*The conversion process may be done by finding the nearest name in a list of pre-defined, standard names, or by using an algorithm and techniques to do the conversion in real time into a form that caters for all possible variations of spelling and splitting and concatenations. The results are given a confidence level (from a string correlation function) presented as a percentage, [0061]*).

It would have been obvious to an ordinary person skilled in the art at the time of the invention was made to incorporate the teachings of Toner with the teachings of Simske for the purpose of resolving variations in spellings and representations for names with foreign origins that may be spelt in any number of ways ([0015] of Toner).

Regarding **claim 2**, Simske further discloses the at least one synonym candidate is determined using a candidate selection criterion depending at least on the value of the data field and on a synonym candidate (*i.e., the electronic thesaurus or other source from which synonyms are determined*) is structured such that the synonyms are rated for their "closeness in meaning" or "proximity" to the original word. Such rating may be performed by the electronic thesaurus, the synonymic search application, some other application, or any combination thereof. For example, suppose such statistics are available for "class" and "list", then the various synonyms for each of the terms may be weighted based on their relative proximity to their respective base word (*i.e., "class" or "list"*).

Regarding **claim 3**, Toner further discloses the candidate selection criterion takes into account how similar a synonym candidate and the value of the data field sound (*The rules employed take into account the original sounds or pronunciations of the letters, eliminating double letters, and looking for special patterns*, [0062]).

Regarding **claim 4**, Toner further discloses the candidate selection criterion specifies that at least a predetermined part of the value of the data field is identical to a predetermined part of a synonym candidate (*a probabilistic search algorithm is used that matches strings according to the length and number of string fragments shared by the two strings*, [0062]).

Regarding **claim 5**, Simske further discloses the candidate selection criterion takes into account also a further data field of the data record, said further data field representing a second identifier (*For the term "class", the following synonyms are identified by the synonymic search application: set, group, division, grade, rank, category, and order. Thus, 7 synonyms are identified for the term "class", resulting in 8 candidate terms (including the word "class" itself) that may be used in searching for "class". For the term "list", the following synonyms are identified by the synonymic search application: catalog, inventory, register, record, roll, and directory. Thus, 6 synonyms are identified for the term "list", resulting in 7 candidate terms (including the word "list" itself) that may be used in searching for "list", [0101]*).

Regarding **claim 6**, Simske further discloses at least one quality parameter is evaluated for a synonym candidate, the synonym acceptance criterion taking into

account the at least one quality parameter (*the synonymic search application may be operable to autonomously weight the synonymic queries in the manner described more fully below in conjunction with Figure 6 such that the optimal synonymic queries are more heavily weighted*, [0078]).

Regarding **claim 9**, Toner further discloses the proportion of identical characters takes into account the order of the characters (*a probabilistic search algorithm is used that matches strings according to the length and number of string fragments shared by the two strings*, [0062]).

Regarding **claim 13**, Simske further discloses a method, wherein the search for the counterpart involves comparison of the value of the data field to a synonym set relating to the identifier, members of said synonym set referring to respective predetermined identifier values, and when the predetermined synonym acceptance criterion is fulfilled, the value of the data field is added to the synonym set as a member referring to the synonym associated with the value of the data field before the search for the counterpart (*For the term "class", the following synonyms are identified by the synonymic search application: set, group, division, grade, rank, category, and order. Thus, 7 synonyms are identified for the term "class", resulting in 8 candidate terms (including the word "class" itself) that may be used in searching for "class". For the term "list", the following synonyms are identified by the synonymic search application: catalog, inventory, register, record, roll, and directory. Thus, 6 synonyms are identified for the term "list", resulting in 7 candidate terms (including the word "list" itself) that may be used in searching for "list"*, [0101]).

Regarding **claim 14**, Simske further discloses wherein determining the at least one synonym candidate is discarded, if a predetermined discard criterion is fulfilled (*supposing that no more than 25 queries are allowed (e.g., because of the user-tuned breadth of the synonymic search query to be performed and/or because of the synonymic search application's implemented query limits), the above-identified 56 queries need to be reduced to the 25 optimal queries to be utilized*, [0101]).

Regarding **claim 15**, Toner further discloses the predetermined discard criterion specifies that the value of the data field is identical to one of the predetermined identifier values (*see the example of permutation process of name components in Figure 6*).

Regarding **claim 16**, Simske further discloses the search for the counterpart involves the synonym set and the predetermined discard criterion specifies that the value of the data field is at least one of the following: one of the predetermined identifier values, and a member of the synonym set (*the overall relevance of all the search results is determined by comparing its keywords to those in the original, user-input query. The top result(s) of each individual query included in a synonymic search query may be presented to a user, which may widen the breadth of the search query--e.g., provides a trade-off between overall weight and weight within a novel query*, [0145]).

Regarding **claim 17**, Simske further discloses the predetermined discard criterion takes into account a value of a second data field in the data record (*Once the weighting for each possible synonymic query is determined in block 605 of Figure 6 (e.g., by multiplying the assigned weight value for each word of the query), the highest weighted*

"Q" queries to be included in the constructed synonymic search query are determined in block 606. For instance, in the above example, the highest weighted 25 synonymic queries (which includes the original user-input query itself) are determined for inclusion in the constructed synonymic search query, [0116]).

Regarding **claim 18**, Simske further discloses information indicating the at least one synonym associated with the value of the data field is added to the data record (Once the weighting for each possible synonymic query is determined in block 605 of Figure 6 (e.g., by multiplying the assigned weight value for each word of the query), the highest weighted "Q" queries to be included in the constructed synonymic search query are determined in block 606. For instance, in the above example, the highest weighted 25 synonymic queries (which includes the original user-input query itself) are determined for inclusion in the constructed synonymic search query, [0116]).

Regarding **claim 19**, Simske further discloses a method, wherein a copy of the data record is made for each synonym associated with the value of the data field (each of the plurality of search engines may be utilized to perform the constructed synonymic search query, [0079]).

Regarding **claim 20**, Toner further discloses a method, wherein the identifier relates to a name of one of the following: a geographical entity, a person and an organization (compare the search query with the Name Database, [0030]).

Regarding **claim 21**, Simske clearly shows and discloses a method of processing a synonym set stored in a computer readable database for searching counterparts in a

reference data set for data records, a data field representing an identifier, members of the synonym set being first identifier values and referring to respective second identifier values, the second identifier values being predetermined identifier values, and said searching for a counterpart involving comparison of a value of the data field to the synonym set (*Figure 6*), the method comprising the steps of, determining among the predetermined identifier values at least one synonym candidate relating to the value of the data field (*For the term "class", the following synonyms are identified by the synonymic search application: set, group, division, grade, rank, category, and order. Thus, 7 synonyms are identified for the term "class", resulting in 8 candidate terms (including the word "class" itself) that may be used in searching for "class". For the term "list", the following synonyms are identified by the synonymic search application: catalog, inventory, register, record, roll, and directory. Thus, 6 synonyms are identified for the term "list", resulting in 7 candidate terms (including the word "list" itself) that may be used in searching for "list", [0101]*), if the value of the data field and a synonym candidate fulfill a predetermined synonym acceptance criterion taking into account writing variations (*supposing that no more than 25 queries are allowed (e.g., because of the user-tuned breadth of the synonymic search query to be performed and/or because of the synonymic search application's implemented query limits), the above-identified 56 queries need to be reduced to the 25 optimal queries to be utilized, [0101]*), automatically adding before searching for a counterpart for a data record the value of the data field to the synonym set in the computer readable database as a member referring to the synonym candidate without intervention of a user (*the synonym*

database (i.e., the electronic thesaurus or other source from which synonyms are determined) is structured such that the synonyms are rated for their "closeness in meaning" or "proximity" to the original word. Such rating may be performed by the electronic thesaurus, the synonymic search application, some other application, or any combination thereof. For example, suppose such statistics are available for "class" and "list", then the various synonyms for each of the terms may be weighted based on their relative proximity to their respective base word (i.e., "class" or "list"), [0103]. If a user-input query includes the phrase "ball sport", then any synonyms of "ball" denoting "dancing" rather than "sports equipment" may be discarded by the synonymic search application, [0112])).

Simske does not explicitly disclose the data field is from a record, and the synonyms take into account writing variations.

However, Toner discloses the data field is from a record (*Users select whether they wish to use a single Suspect name at a time, manually entered by the keyboard, or to use an existing file containing a list of Suspect names, [0094]*), and synonyms take into account writing variations (*The conversion process may be done by finding the nearest name in a list of pre-defined, standard names, or by using an algorithm and techniques to do the conversion in real time into a form that caters for all possible variations of spelling and splitting and concatenations. The results are given a confidence level (from a string correlation function) presented as a percentage, [0061]*).

It would have been obvious to an ordinary person skilled in the art at the time of the invention was made to incorporate the teachings of Toner with the teachings of Simske for the purpose of resolving variations in spellings and representations for names with foreign origins that may be spelt in any number of ways ([0015] of Toner).

Regarding **claim 22**, Simske further discloses a method, wherein the synonym set is empty before adding the value of the data field to the synonym set (*Once the weighting for each possible synonymic query is determined in block 605 of Figure 6 (e.g., by multiplying the assigned weight value for each word of the query), the highest weighted "Q" queries to be included in the constructed synonymic search query are determined in block 606. For instance, in the above example, the highest weighted 25 synonymic queries (which includes the original user-input query itself) are determined for inclusion in the constructed synonymic search query, [0116]*).

Regarding **claim 23**, Simske further discloses a method, wherein the synonym set contains at least one member before adding the value of the data field to the synonym set (*a number "Q" of queries to be included in the synonymic search query is determined based at least in part on the breadth desired for the synonymic search query. If the user tunes the breadth of the synonymic search query to be very general, then the number "Q" may be determined to be much larger (e.g., 25 or more), or the user may tune the breadth to any other amount desired. Thus, the tuning of the breadth of the synonymic search query in block 303 may dictate the total number of queries to be included in the constructed synonymic search query, [0096]. It is well inherent that if*

the breath of the query is greater than 26, then the top 26 queries are produced for searching for counterparts).

Regarding **claim 24**, Simske further discloses a computer program embodied in a computer-readable record medium, the computer-readable record medium including program instructions for causing a computer to perform a method for processing a data record for finding a counterpart in a reference data set ([0013]), the method comprising the steps of:

determining a value of a data field, the data field representing an identifier
(*Suppose the user inputs the query "class list for Stanford", [0101]*),

determining from a set of predetermined identifier values at least one synonym candidate for the value of the data field (*For the term "class", the following synonyms are identified by the synonymic search application: set, group, division, grade, rank, category, and order. Thus, 7 synonyms are identified for the term "class", resulting in 8 candidate terms (including the word "class" itself) that may be used in searching for "class". For the term "list", the following synonyms are identified by the synonymic search application: catalog, inventory, register, record, roll, and directory. Thus, 6 synonyms are identified for the term "list", resulting in 7 candidate terms (including the word "list" itself) that may be used in searching for "list", [0101]*),

determining if a synonym candidate and the value of the data field fulfill a predetermined synonym acceptance criterion (*supposing that no more than 25 queries are allowed (e.g., because of the user-tuned breadth of the synonymic search query to*

be performed and/or because of the synonymic search application's implemented query limits), the above-identified 56 queries need to be reduced to the 25 optimal queries to be utilized, [0101], and if the predetermined synonym acceptance criterion is fulfilled, associating the value of the data field and the synonym candidate as synonyms (the synonym database (i.e., the electronic thesaurus or other source from which synonyms are determined) is structured such that the synonyms are rated for their "closeness in meaning" or "proximity" to the original word. Such rating may be performed by the electronic thesaurus, the synonymic search application, some other application, or any combination thereof. For example, suppose such statistics are available for "class" and "list", then the various synonyms for each of the terms may be weighted based on their relative proximity to their respective base word (i.e., "class" or "list"), [0103]) and automatically updating a synonym set associated with the value of the data field by adding the synonym candidate to the synonym set without intervention of a user before searching for a counterpart (Once the weighting for each possible synonymic query is determined in block 605 of Figure 6 (e.g., by multiplying the assigned weight value for each word of the query), the highest weighted "Q" queries to be included in the constructed synonymic search query are determined in block 606. For instance, in the above example, the highest weighted 25 synonymic queries (which includes the original user-input query itself) are determined for inclusion in the constructed synonymic search query, [0116]. If a user-input query includes the phrase "ball sport", then any synonyms of "ball" denoting "dancing" rather than "sports equipment" may be discarded by the synonymic search application, [0112]),

searching for the counterpart for the data record by comparing to entries of the reference data set the value of the data field and/or the synonym set after the step of determining if the predetermined synonym acceptance criterion is fulfilled (*the overall relevance of all the search results is determined by comparing its keywords to those in the original, user-input query. The top result(s) of each individual query included in a synonymic search query may be presented to a user, which may widen the breadth of the search query--e.g., provides a trade-off between overall weight and weight within a novel query, [0145]*), wherein if the synonym set was updated, said comparison to the synonym set comprises comparison to the updated synonym set (*a number "Q" of queries to be included in the synonymic search query is determined based at least in part on the breadth desired for the synonymic search query. If the user tunes the breadth of the synonymic search query to be very general, then the number "Q" may be determined to be much larger (e.g., 25 or more), or the user may tune the breadth to any other amount desired. Thus, the tuning of the breadth of the synonymic search query in block 303 may dictate the total number of queries to be included in the constructed synonymic search query, [0096]. It is well inherent that if the breath of the query is greater than 26, then the top 26 queries are produced for searching for counterparts*).

Simske does not explicitly disclose the data field is from a record, and the synonyms take into account writing variations.

However, Toner discloses the data field is from a record (*Users select whether they wish to use a single Suspect name at a time, manually entered by the keyboard, or*

to use an existing file containing a list of Suspect names, [0094]), and synonyms take into account writing variations (The conversion process may be done by finding the nearest name in a list of pre-defined, standard names, or by using an algorithm and techniques to do the conversion in real time into a form that caters for all possible variations of spelling and splitting and concatenations. The results are given a confidence level (from a string correlation function) presented as a percentage, [0061]).

It would have been obvious to an ordinary person skilled in the art at the time of the invention was made to incorporate the teachings of Toner with the teachings of Simske for the purpose of resolving variations in spellings and representations for names with foreign origins that may be spelt in any number of ways ([0015] of Toner).

Regarding **claim 25**, Simske further discloses a computer-readable record medium having stored thereon computer-executable instructions for causing a computer to perform a method for processing a synonym set for searching counterparts in a reference data set for data records, a data field representing an identifier, members of the synonym set being first identifier values and referring to respective second identifier values, the second identifier values being predetermined identifier values, and said searching for a counterpart involving comparison of a value of the data field to the synonym set ([0013]), the method comprising the steps of determining among the predetermined identifier values at least one synonym candidate relating to the value of the data field (*For the term "class", the following synonyms are identified by the synonymic search application: set, group, division, grade, rank, category, and order. Thus, 7 synonyms are identified for the term "class", resulting in 8 candidate terms*

(including the word "class" itself) that may be used in searching for "class". For the term "list", the following synonyms are identified by the synonymic search application: catalog, inventory, register, record, roll, and directory. Thus, 6 synonyms are identified for the term "list", resulting in 7 candidate terms (including the word "list" itself) that may be used in searching for "list", [0101]), and, if the value of the data field and a synonym candidate fulfill a predetermined synonym acceptance criterion (supposing that no more than 25 queries are allowed (e.g., because of the user-tuned breadth of the synonymic search query to be performed and/or because of the synonymic search application's implemented query limits), the above-identified 56 queries need to be reduced to the 25 optimal queries to be utilized, [0101]), automatically adding before searching for a counterpart for a data record the value of the data field to the synonym set as a member referring to the synonym candidate without intervention of a user (the synonym database (i.e., the electronic thesaurus or other source from which synonyms are determined) is structured such that the synonyms are rated for their "closeness in meaning" or "proximity" to the original word. Such rating may be performed by the electronic thesaurus, the synonymic search application, some other application, or any combination thereof. For example, suppose such statistics are available for "class" and "list", then the various synonyms for each of the terms may be weighted based on their relative proximity to their respective base word (i.e., "class" or "list"), [0103]. If a user-input query includes the phrase "ball sport", then any synonyms of "ball" denoting "dancing" rather than "sports equipment" may be discarded by the synonymic search application, [0112]).

Simske does not explicitly disclose the data field is from a record, and the synonyms take into account writing variations.

However, Toner discloses the data field is from a record (*Users select whether they wish to use a single Suspect name at a time, manually entered by the keyboard, or to use an existing file containing a list of Suspect names, [0094]*), and synonyms take into account writing variations (*The conversion process may be done by finding the nearest name in a list of pre-defined, standard names, or by using an algorithm and techniques to do the conversion in real time into a form that caters for all possible variations of spelling and splitting and concatenations. The results are given a confidence level (from a string correlation function) presented as a percentage, [0061]*).

It would have been obvious to an ordinary person skilled in the art at the time of the invention was made to incorporate the teachings of Toner with the teachings of Simske for the purpose of resolving variations in spellings and representations for names with foreign origins that may be spelt in any number of ways ([0015] of Toner).

Regarding **claim 26**, Simske clearly shows and discloses a data processing system comprising a processor for processing data records for finding counterparts in a reference data set ([0014]), the system comprising:

Simske discloses:

memory means for storing the reference data set (*Search engines enable a user to input a search query thereto and retrieve from the corpus of information (e.g., a local*

database and/or client-server network) information containing the user-specified search query terms, [0029]),

means for storing predetermined identifier values for an identifier (For the term "class", the following synonyms are identified by the synonymic search application: set, group, division, grade, rank, category, and order. Thus, 7 synonyms are identified for the term "class", resulting in 8 candidate terms (including the word "class" itself) that may be used in searching for "class". For the term "list", the following synonyms are identified by the synonymic search application: catalog, inventory, register, record, roll, and directory. Thus, 6 synonyms are identified for the term "list", resulting in 7 candidate terms (including the word "list" itself) that may be used in searching for "list", [0101]),

means for determining values of a data field, the data field representing the identifier (Suppose the user inputs the query "class list for Stanford", [0101]),

means for associating values of the field and respective predetermined identifier values as synonyms, said means configured to determine from the predetermined identifier values at least one synonym candidate for a value of the data field (For the term "class", the following synonyms are identified by the synonymic search application: set, group, division, grade, rank, category, and order. Thus, 7 synonyms are identified for the term "class", resulting in 8 candidate terms (including the word "class" itself) that may be used in searching for "class". For the term "list", the following synonyms are identified by the synonymic search application: catalog, inventory, register, record, roll, and directory. Thus, 6 synonyms are identified for the term "list", resulting in 7 candidate

terms (including the word "list" itself) that may be used in searching for "list", [0101]), to determine if a synonym candidate and the value of the data field fulfill a predetermined synonym acceptance criterion (supposing that no more than 25 queries are allowed (e.g., because of the user-tuned breadth of the synonymic search query to be performed and/or because of the synonymic search application's implemented query limits), the above-identified 56 queries need to be reduced to the 25 optimal queries to be utilized, [0101]), and if the predetermined synonym acceptance synonym is fulfilled, to associate the value of the data field and the synonym candidate as synonyms (i.e., the electronic thesaurus or other source from which synonyms are determined) is structured such that the synonyms are rated for their "closeness in meaning" or "proximity" to the original word. Such rating may be performed by the electronic thesaurus, the synonymic search application, some other application, or any combination thereof. For example, suppose such statistics are available for "class" and "list", then the various synonyms for each of the terms may be weighted based on their relative proximity to their respective base word (i.e., "class" or "list"), [0103]) and to automatically add the synonym candidate to a synonym set associated with the value of the data field without intervention of a user before searching for a counterpart to provide an updated synonym set (Once the weighting for each possible synonymic query is determined in block 605 of Figure 6 (e.g., by multiplying the assigned weight value for each word of the query), the highest weighted "Q" queries to be included in the constructed synonymic search query are determined in block 606. For instance, in the above example, the highest weighted 25 synonymic queries (which includes the original

user-input query itself) are determined for inclusion in the constructed synonymic search query, [0116]. If a user-input query includes the phrase "ball sport", then any synonyms of "ball" denoting "dancing" rather than "sports equipment" may be discarded by the synonymic search application, [0112]), and

means for searching counterparts in the reference data set for the data records by comparing to entries of the reference data set values of data fields and/or said updated synonyms set (the overall relevance of all the search results is determined by comparing its keywords to those in the original, user-input query. The top result(s) of each individual query included in a synonymic search query may be presented to a user, which may widen the breadth of the search query--e.g., provides a trade-off between overall weight and weight within a novel query, [0145]).

Simske does not disclose receive data records, and determining the data field representing the identifier in the data records.

However, Toner discloses:

means for receiving data records (Users select whether they wish to use a single Suspect name at a time, manually entered by the keyboard, or to use an existing file containing a list of Suspect names, [0094]),

means for determining in the data records values of a data field, the data field representing the identifier (Figure 3 shows an exemplary parsed name where in the inputted suspect name "Robert James Smith" is divided into three name components 'Robert', 'James', and 'Smith', [0139]-[0140]),

It would have been obvious to an ordinary person skilled in the art at the time of the invention was made to incorporate the teachings of Toner with the teachings of Simske for the purpose of resolving variations in spellings and representations for names with foreign origins that may be spelt in any number of ways ([0015] of Toner).

Regarding **claim 27**, Simske further discloses:

means for storing a synonym set, members of said synonym set referring to respective predetermined identifier values (*a thesaurus compiles many words in the English language and identifies synonyms that may be used in place of each word*, [0030]),

wherein the means for associating values of the data field and respective predetermined identifier values as synonyms are configured to add to the synonym set a member referring to the synonym associated with the value of the data field before activation of the means for searching counterparts (*the overall relevance of all the search results is determined by comparing its keywords to those in the original, user-input query. The top result(s) of each individual query included in a synonymic search query may be presented to a user, which may widen the breadth of the search query--e.g., provides a trade-off between overall weight and weight within a novel query*, [0145]).

Regarding **claim 28**, Simske clearly shows and discloses a data processing system comprising a processor for processing a synonym set for searching counterparts in a reference data set for data records, a data field representing an identifier, members

of the synonym set being first identifier values and referring to respective second identifier values, said second identifier values being predetermined identifier values, and said searching involving comparing a value of the data field to the synonym set ([0014]), the system comprising :

memory means for storing the synonym set (*a thesaurus compiles many words in the English language and identifies synonyms that may be used in place of each word, [0030]*),

means for storing predetermined identifier values for the identifier (*For the term "class", the following synonyms are identified by the synonymic search application: set, group, division, grade, rank, category, and order. Thus, 7 synonyms are identified for the term "class", resulting in 8 candidate terms (including the word "class" itself) that may be used in searching for "class". For the term "list", the following synonyms are identified by the synonymic search application: catalog, inventory, register, record, roll, and directory. Thus, 6 synonyms are identified for the term "list", resulting in 7 candidate terms (including the word "list" itself) that may be used in searching for "list", [0101]*),

means automatically for adding to the synonym set a value of the data field and respective predetermined identifier values associated as synonyms without intervention of a user before searching for counterparts in the reference data set (*For the term "class", the following synonyms are identified by the synonymic search application: set, group, division, grade, rank, category, and order. Thus, 7 synonyms are identified for the term "class", resulting in 8 candidate terms (including the word "class" itself) that*

may be used in searching for "class". For the term "list", the following synonyms are identified by the synonymic search application: catalog, inventory, register, record, roll, and directory. Thus, 6 synonyms are identified for the term "list", resulting in 7 candidate terms (including the word "list" itself) that may be used in searching for "list", [0101]),

said means configured to determine from the predetermined identifier values at least one synonym candidate for a value of the data field (*For the term "class", the following synonyms are identified by the synonymic search application: set, group, division, grade, rank, category, and order. Thus, 7 synonyms are identified for the term "class", resulting in 8 candidate terms (including the word "class" itself) that may be used in searching for "class". For the term "list", the following synonyms are identified by the synonymic search application: catalog, inventory, register, record, roll, and directory. Thus, 6 synonyms are identified for the term "list", resulting in 7 candidate terms (including the word "list" itself) that may be used in searching for "list", [0101]),* to determine if a synonym candidate and the value of the data field fulfill a predetermined synonym acceptance criterion (*supposing that no more than 25 queries are allowed (e.g., because of the user-tuned breadth of the synonymic search query to be performed and/or because of the synonymic search application's implemented query limits), the above-identified 56 queries need to be reduced to the 25 optimal queries to be utilized, [0101]),* and if the predetermined synonym acceptance criterion is fulfilled, to associate the value of the data field and the synonym candidates as synonyms (*For the term "class", the following synonyms are identified by the synonymic search application: set, group, division, grade, rank, category, and order. Thus, 7 synonyms are identified*

for the term "class", resulting in 8 candidate terms (including the word "class" itself) that may be used in searching for "class". For the term "list", the following synonyms are identified by the synonymic search application: catalog, inventory, register, record, roll, and directory. Thus, 6 synonyms are identified for the term "list", resulting in 7 candidate terms (including the word "list" itself) that may be used in searching for "list", [0101]. If a user-input query includes the phrase "ball sport", then any synonyms of "ball" denoting "dancing" rather than "sports equipment" may be discarded by the synonymic search application, [0112]).

Simske does not disclose receiving data records, and determining the data field representing the identifier in the data records.

However, Toner discloses:

receiving data records (Users select whether they wish to use a single Suspect name at a time, manually entered by the keyboard, or to use an existing file containing a list of Suspect names, [0094]),

determining in the data records values of a data field, the data field representing the identifier (Figure 3 shows an exemplary parsed name where in the inputted suspect name "Robert James Smith" is divided into three name components 'Robert', 'James', and 'Smith', [0139]-[0140]),

It would have been obvious to an ordinary person skilled in the art at the time of the invention was made to incorporate the teachings of Toner with the teachings of

Simske for the purpose of resolving variations in spellings and representations for names with foreign origins that may be spelt in any number of ways ([0015] of Toner).

Regarding **claim 29**, Simske clearly shows and discloses a data processing apparatus, comprising at least one processor configured to process data records for finding counterparts in a reference data set ([0014]), to determine values of a data field, the data field representing an identifier (*Suppose the user inputs the query "class list for Stanford", [0101]*), to associate values of the data field and respective predetermined identifier values as synonyms (*Name substitution matching, where component words of the Suspect name are checked against a synonym table and are replaced with their respective synonyms, [0088]*), to determine if a synonym candidate and the value of the data field fulfill a predetermined synonym acceptance criterion (*supposing that no more than 25 queries are allowed (e.g., because of the user-tuned breadth of the synonymic search query to be performed and/or because of the synonymic search application's implemented query limits), the above-identified 56 queries need to be reduced to the 25 optimal queries to be utilized, [0101]*), and if the predetermined synonym acceptance criterion is fulfilled, to associate the value of the data field and the synonym candidate as synonyms (*the synonym database (i.e., the electronic thesaurus or other source from which synonyms are determined) is structured such that the synonyms are rated for their "closeness in meaning" or "proximity" to the original word. Such rating may be performed by the electronic thesaurus, the synonymic search application, some other application, or any combination thereof. For example, suppose such statistics are available for "class" and "list", then the various synonyms for each of the terms may be*

weighted based on their relative proximity to their respective base word (i.e., "class" or "list"), [0103]), and to automatically add the synonym candidate to a synonym set associated with the value of the data field to provide an updated a synonym without intervention of a user before searching for counterparts (Once the weighting for each possible synonymic query is determined in block 605 of Figure 6 (e.g., by multiplying the assigned weight value for each word of the query), the highest weighted "Q" queries to be included in the constructed synonymic search query are determined in block 606. For instance, in the above example, the highest weighted 25 synonymic queries (which includes the original user-input query itself) are determined for inclusion in the constructed synonymic search query, [0116]. If a user-input query includes the phrase "ball sport", then any synonyms of "ball" denoting "dancing" rather than "sports equipment" may be discarded by the synonymic search application, [0112]), to store the updated synonym set, and to search the counterparts in the reference data set for the data records by comparing the data records to entries of the reference data set values of data fields and/or said updated synonym set (the overall relevance of all the search results is determined by comparing its keywords to those in the original, user-input query. The top result(s) of each individual query included in a synonymic search query may be presented to a user, which may widen the breadth of the search query—e.g., provides a trade-off between overall weight and weight within a novel query, [0145]).

Simske does not explicitly disclose the data field is from a record, and the synonyms take into account writing variations.

However, Toner discloses the data field is from a record (*Users select whether they wish to use a single Suspect name at a time, manually entered by the keyboard, or to use an existing file containing a list of Suspect names, [0094]*), and synonyms take into account writing variations (*The conversion process may be done by finding the nearest name in a list of pre-defined, standard names, or by using an algorithm and techniques to do the conversion in real time into a form that caters for all possible variations of spelling and splitting and concatenations. The results are given a confidence level (from a string correlation function) presented as a percentage, [0061]*).

It would have been obvious to an ordinary person skilled in the art at the time of the invention was made to incorporate the teachings of Toner with the teachings of Simske for the purpose of resolving variations in spellings and representations for names with foreign origins that may be spelt in any number of ways ([0015] of Toner).

Regarding **claim 30**, Simske further discloses members of said synonym set referring to respective predetermined identifier values, and wherein the at least one processor is configured to add to the synonym set stored in the at least one memory a member referring to the synonym associated with the value of the data field before activation of the search for counterparts (*Once the weighting for each possible synonymic query is determined in block 605 of Figure 6 (e.g., by multiplying the assigned weight value for each word of the query), the highest weighted "Q" queries to be included in the constructed synonymic search query are determined in block 606. For instance, in the above example, the highest weighted 25 synonymic queries (which*

includes the original user-input query itself) are determined for inclusion in the constructed synonymic search query, [0116]).

Regarding **claim 31**, Simske clearly discloses a data processing apparatus comprising a processor ([0014]) configured to determine if a synonym candidate and the value of the data field fulfill a predetermined synonym acceptance criterion (*supposing that no more than 25 queries are allowed (e.g., because of the user-tuned breadth of the synonymic search query to be performed and/or because of the synonymic search application's implemented query limits), the above-identified 56 queries need to be reduced to the 25 optimal queries to be utilized, [0101]*), and if the predetermined synonym acceptance criterion is fulfilled, to associate the value of the data field and the synonym candidate as synonyms (*the synonym database (i.e., the electronic thesaurus or other source from which synonyms are determined) is structured such that the synonyms are rated for their "closeness in meaning" or "proximity" to the original word. Such rating may be performed by the electronic thesaurus, the synonymic search application, some other application, or any combination thereof. For example, suppose such statistics are available for "class" and "list", then the various synonyms for each of the terms may be weighted based on their relative proximity to their respective base word (i.e., "class" or "list"), [0103]*), and to automatically add to a synonym set stored in a memory a value of the data field and respective predetermined identifier values associated as synonyms without intervention of a user to update the synonym set before input into a searching system configured to search for counterparts in the reference data set by comparing a value of the data field to the updated synonym set

(Once the weighting for each possible synonymic query is determined in block 605 of Figure 6 (e.g., by multiplying the assigned weight value for each word of the query), the highest weighted "Q" queries to be included in the constructed synonymic search query are determined in block 606. For instance, in the above example, the highest weighted 25 synonymic queries (which includes the original user-input query itself) are determined for inclusion in the constructed synonymic search query, [0116]. If a user-input query includes the phrase "ball sport", then any synonyms of "ball" denoting "dancing" rather than "sports equipment" may be discarded by the synonymic search application, [0112]).

Simske does not explicitly disclose the synonyms take into account writing variations.

However, Toner discloses the synonyms take into account writing variations (*The conversion process may be done by finding the nearest name in a list of pre-defined, standard names, or by using an algorithm and techniques to do the conversion in real time into a form that caters for all possible variations of spelling and splitting and concatenations. The results are given a confidence level (from a string correlation function) presented as a percentage, [0061]).*

It would have been obvious to an ordinary person skilled in the art at the time of the invention was made to incorporate the teachings of Toner with the teachings of Simske for the purpose of resolving variations in spellings and representations for names with foreign origins that may be spelt in any number of ways ([0015] of Toner).

9. **Claims 7-8** is rejected under 35 U.S.C. 103(a) as being unpatentable over Simske et al. (*Pub. No. US 2004/0064447, filed on September 27, 2002; hereinafter Simske*) in view of Toner et al. (*Pub. No. US 2004/0024760, filed on July 31, 2002; hereinafter Toner*), and further in view of Bellany et al. (*Pub. No. US 2002/0078024, filed on October 12, 2001; hereinafter Bellany*).

Regarding **claim 7**, Simske, as modified by Toner, does not teach at least one quality parameter takes into account at least one of the following quantities: a number of changes required for converting the value of the data field to be identical to a synonym candidate; a proportion of identical characters in the value of the data field and in a synonym candidate; and a difference between the length of the value of the data field and the length of a synonym candidate.

However, Bellany discloses at least one quality parameter takes into account at least one of the following quantities: a number of changes required for converting the value of the data field to be identical to a synonym candidate (*on not finding any entries in the dictionary identical to the input data, the processor may then search allowing for one error at first, and if that search fails, performing a further search, allowing for two errors, and so on. A single error may be counted if the search term and the dictionary entry differ by one character being deleted, added or replaced with a different character. The quality of correspondence between two terms may be judged by calculating the "Levenshtein" distance between the two strings, [0044]*).

It would have been obvious to a person with ordinary skills in the art at the time of the invention to incorporate the teachings of Bellany with the teachings of Simske, as

modified by Toner, for the purpose of retrieving a desired postal address from a plurality of postal addresses by searching a dictionary for entries in the dictionary corresponding to the searched terms ([Abstract] of Bellany).

Regarding **claim 8**, Bellany further discloses the number of changes required for converting the value of the data field to be identical to a synonym candidate is calculated using the Levenshtein distance (*on not finding any entries in the dictionary identical to the input data, the processor may then search allowing for one error at first, and if that search fails, performing a further search, allowing for two errors, and so on. A single error may be counted if the search term and the dictionary entry differ by one character being deleted, added or replaced with a different character. The quality of correspondence between two terms may be judged by calculating the "Levenshtein" distance between the two strings, [0044]*).

10. **Claims 10-12** are rejected under 35 U.S.C. 103(a) as being unpatentable over Simske et al. (Pub. No. US 2004/0064447, filed on September 27, 2002; hereinafter Simske) in view of Toner et al. (Pub. No. US 2004/0024760, filed on July 31, 2002; hereinafter Toner), and further in view of Murakami et al. (Pub. No. US 2004/0181759, filed on July, 19, 2002; hereinafter Murakami).

Regarding **claim 10**, Simske, as modified by Toner, does not disclose a first quality parameter is evaluated for each synonym candidate and at least a second quality parameter is evaluated at least for the synonym candidate(s) having the best first quality parameter.

However, Murakami further discloses a first quality parameter is evaluated for each synonym candidate and at least a second quality parameter is evaluated at least for the synonym candidate(s) having the best first quality parameter (*generating a first set of candidate synonyms for the object word, based on whole of the document data and generating at least one second set of candidate synonyms for the object word, based on at least one part of the document data and narrowing the candidate synonyms contained in the first set using the candidate synonyms contained in the second set,* [0016]).

It would have been obvious to a person with ordinary skills in the art at the time of the invention to incorporate the teachings of Murakami with the teachings of Simske, as modified by Toner, for the purpose of generating the candidate synonyms more efficiently by handling all abbreviations and peculiar terms including misspelled or misconverted words ([0015] of Murakami).

Regarding **claim 11**, Murakami further discloses the synonym acceptance criterion requires that there is only one synonym candidate having the best at least one quality parameter (*Table 1 shows that the firstly ranked candidate "batt" has the highest degree of relatedness,* [0055]).

Regarding **claim 12**, Murakami further discloses a method, wherein at least two quality parameters are evaluated for each synonym candidate and the synonym candidate acceptance criterion specifies a threshold for one of the at least two quality parameters, the threshold being dependent on a further one of the at least two quality

parameters (generating a first set of candidate synonyms for the object word, based on whole of the document data and generating at least one second set of candidate synonyms for the object word, based on at least one part of the document data and narrowing the candidate synonyms contained in the first set using the candidate synonyms contained in the second set, [0016] Candidate synonyms of the first set can be narrowed with the candidate synonyms of the second sets similarly to the aforementioned method. In this case, the candidates which are ranked in places equal to or higher than a threshold value place in the second sets are evaluated to be "absolute." The candidate synonyms evaluated to be "absolute" are almost regarded as synonyms, [0021]).

Conclusion

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact Information

12. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Son T. Hoang whose telephone number is (571) 270-1752. The Examiner can normally be reached on Monday – Friday (7:00 AM – 4:00 PM).

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Neveen Abel-Jalil can be reached on (571) 272-4074. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/S. T. H./
Examiner, Art Unit 2165
May 28, 2009

/Neeven Abel-Jalil/
Supervisory Patent Examiner, Art Unit 2165